



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/751,350

12/27/2000

Hiroshi Minagawa

SIP1P043

8814

22434

7590

09/14/2004

BEYER WEAVER & THOMAS LLP  
P.O. BOX 778  
BERKELEY, CA 94704-0778

EXAMINER

SEALEY, LANCE W

ART UNIT

PAPER NUMBER

2671

10

DATE MAILED: 09/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/751,350

Applicant(s)

MINAGAWA ET AL.

Examiner

Lance W. Sealey

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                        |                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>g</u> . | 6) <input type="checkbox"/> Other: _____                                                |

Art Unit 2671

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 5, 10-11, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al. ("Imai," U.S. Pat. No. 6,712,700) in view of Kaneko et al., English translation "Algorithms to Generate Cel-touch Images Using 3D Computer Graphics Images" ("Kaneko").

3. With respect to claims 1, 14 and 19, Imai discloses a video game (col.1, ll.44-47) which draws a three-dimensional object in a virtual space (col.11, ll.27-31). Imai also discloses a computer-readable storage medium storing a program (operation processing unit 103, FIG.34).

4. However, Imai does not disclose the other elements of these claims; these are disclosed by the Kaneko animation drawer. The Kaneko program (though Kaneko discusses algorithms and not necessarily programs, the algorithms were meant to be implemented as programs because of the discussion of computers at pages 1 and 3-4) is structured so as to make a computer perform:

- generating a contour-drawing object having a size greater than that of said object (steps 1 through 4 of the Kaneko "silhouette method", p.9; the contour-drawing object is A', and in step 4, since A' is 101-105% the size of A, the contour-drawing object A' is of

Art Unit 2671

a size greater than said object A);

- determining positions of said contour-drawing object and said object so that said contour-drawing object thus generated is positioned behind said object when observed from a view point  
(step 6, p.9—pasting A on A' frame has the effect of positioning the contour-drawing object (A') behind said object (A));
- determining whether any portion of the contour-drawing object overlaps said three-dimensional object when observed from the view point  
(step 7(b), p.9: in order to “freely change the color of the trimming line by changing the color of the silhouette,” the portion of the contour-drawing object overlapping the three-dimensional object would have to be determined); and
- drawing said three-dimensional object at said position thus determined and drawing said contour-drawing object in an optional contour color and at said determined position except for a portion of the contour-drawing object that overlaps said three-dimensional object when observed from the view point.  
(steps 6 and 7(b), p.9)

5. Imai and Kaneko are combinable because both references are concerned with presentation of cel animation (Imai, col.6, ll.46-48; Kaneko, Title). Furthermore, neither Imai nor Kaneko are rendered unsatisfactory for their intended purpose because combining Imai with Kaneko does not make Imai no longer useful as a video game, or Kaneko no longer useful as a drawing method.

6. Therefore, it would have been obvious to one of ordinary skill in the art to have modified the Imai video game in view of the Kaneko drawing method by incorporating the Kaneko silhouette method algorithm (p.9) into the Imai operation processing unit **103**, FIG.34. Such a modification would not constitute a substantial construction and redesign of the elements shown in Imai, or a change in the basic principle under which Imai was designed to operate. Such a modification to Imai would have a reasonable degree of success because it would enable contour-

Art Unit 2671

drawing objects to be produced in cel animation at low cost (Kaneko, p.1).

7. Concerning claims 2, 11 and 15, Kaneko discloses drawing the three-dimensional object in the order of steps in claim 1 at p.9 (steps 1-4, 6 and 7(b)).

8. Regarding claim 5, Kaneko discloses the contour-drawing object appearing outside the edge of said three-dimensional object when observed from the view point ((1) Silhouette Method, first paragraph, pp.8-9).

9. Claim 10 is the same as claim 1 except that claim 1 discloses a computer-readable medium storing a program which draws an object, and claim 10 discloses an object drawing method. Since a method of drawing an object (claim 10) is inherent in the program (claim 1), claim 10 is also rejected.

10. Accordingly, in view of the foregoing, claims 1, 2, 5, 10-11, 14-15 and 19 are rejected as being unpatentable under 35 U.S.C. 103(a) by Imai and Kaneko.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Kaneko and further in view of Dye et al. ("Dye," U.S. Pat. No. 6,518,965).

12. As shown in the rejection of claim 1, Kaneko discloses drawing said object at said determined position and drawing said contour-drawing object at said determined position and in the optional contour color. However, neither Imai nor Kaneko disclose a hidden surface removal treatment using a Z buffer. These elements are disclosed by the Dye graphics system and method for rendering independent 2D and 3D objects at col.34, ll.21-64 (Dye allows for use of a Z-buffer in col.13, ll.53-59).

Art Unit 2671

13. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Imai-Kaneko video game in view of the Dye rendering system. Such a modification would save time by preventing the drawing of objects that are behind other objects (Dye, col.34, ll.24-26).

14. Accordingly, in view of the foregoing, claim 3 is rejected as being unpatentable under 35 U.S.C. 103(a) by Imai, Kaneko and Dye.

15. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Kaneko and further in view of Kamakura et al. ("Kamakura," U.S. Pat. No. 6,172,657).

16. Neither Imai nor Kaneko disclose the contour-drawing object generated by expanding the size of the three-dimensional object. However, this is disclosed by the Kamakura display apparatus at col.11, ll.6-19.

17. Therefore, it would have been obvious to one of ordinary skill in the art at the time the inventions was made to have modified the Imai-Kaneko video game in view of the Kamakura display. The user can then readily match the size of the displayed image to the size of the object in the outside view (Kamakura, col.11, ll.22-24).

18. Accordingly, in view of the foregoing, claim 4 is rejected as being unpatentable under 35 U.S.C. 103(a) by Imai, Kaneko and Kamakura.

19. Claims 6-9, 12-13, 16-18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Kaneko and further in view of Schaufler, "Image-Based Object Representation by Layered Impostors."

Art Unit 2671

20. With respect to claim 6, neither Imai nor Kaneko disclose the three-dimensional object drawn at said determined position and said contour-drawing object is drawn at said determined position except for the overlapping portion between said three-dimensional object and said contour-drawing object when observed from the view point, by use of texture mapping.

However, this element is disclosed by the Schaufler paper at p.101 (Section 3.2, “Layered Impostors”).

21. Therefore, it would have been obvious to one of ordinary skill in the art at the time this invention was made to have modified the Imai-Kaneko video game in view of the Schaufler image warping method. Texture mapping makes high-quality rendering possible (Schaufler, “Object representations,” pp.100-101, seventh sentence).

22. Concerning claim 7, Schaufler discloses the three-dimensional object drawn at said determined position and said contour-drawing object is drawn at said determined position except for the overlapping portion between said three-dimensional object and said contour-drawing object when observed from the view point, by use of texture mapping with texture varying with a lapse of time (3.4, “Generating the images in the representation”, pp.101-103. Figure 5 on p.102 shows an example of image-based object representation for a teapot. At the bottom of Figure 5 is a final image derived from the 32-image representation. Schaufler discloses the importance of avoiding holes in the final image, stating that it is sufficient to draw only those layers which will actually contain the texels to close the holes in the final image (last sentence, p.102). Schaufler then writes *when* certain layered imposters are drawn to avoid holes as p.103 begins.).

Art Unit 2671

23. With respect to claims 8, 16, 18 and 20, Imai discloses a video game and computer-readable storage medium storing a program which draws an object, and Kaneko discloses a program structured so as to make a computer perform:

- generating a contour-drawing object having a size greater than that of said three-dimensional object  
(steps 1 through 4 of the Kaneko “silhouette method”, p.9; the contour-drawing object is A', and in step 4, since A' is 101-105% the size of A, the contour-drawing object A' is of a size greater than said object A);
- determining positions of said contour-drawing object and said three-dimensional object so that said contour-drawing object thus generated is positioned behind said three-dimensional object when observed from a view point  
(step 6, p.9—pasting A on A' frame has the effect of positioning the contour-drawing object (A') behind said three-dimensional object (A)); and
- determining whether any portion of the contour-drawing object overlaps said three-dimensional object when observed from the view point  
(step 7(b), p.9: in order to “freely change the color of the trimming line by changing the color of the silhouette,” the portion of the contour-drawing object overlapping the three-dimensional object would have to be determined); and
- drawing said three-dimensional object at said position thus determined and drawing said contour-drawing object in an optional contour color and at said determined position except for an overlapping portion between said three-dimensional object and said contour-drawing object when observed from the view point.  
(steps 6 and 7(b), p.9)

24. However, still with respect to claims 8, 16, 18 and 20, neither Imai, Kaneko nor Schaufler explicitly disclose the underlined claim limitations: a three-dimensional object comprised of a plurality of polygons, setting a distance from a view point of each polygon forming said contour-drawing object and said object so that said contour-drawing object thus generated is positioned behind said three-dimensional object when observed from the view point, and drawing each



Art Unit 2671

polygon forming said three-dimensional object and drawing each polygon forming said contour-drawing object in an optional contour color in accordance with a drawing order of said polygons resulting from sequencing of said polygons from the greatest distance from the view point, set in said setting. But it would have been obvious to draw the three-dimensional object and the contour-drawing object using polygons because the use of polygons enables real world objects to be drawn with high realism (Schaufler, "1 Introduction," fourth sentence, p.99).

25. With respect to claims 9, 17 and 21, Imai discloses a video game and a computer-readable storage medium storing a program which draws a three-dimensional object, and Kaneko and Schaufler disclose a program structured so as to make a computer perform:

- generating a contour-drawing object having a size greater than that of said object (steps 1 through 4 of the Kaneko "silhouette method", p.9; the contour-drawing object is A', and in step 4, since A' is 101-105% the size of A, the contour-drawing object A' is of a size greater than said object A);
- determining positions of said contour-drawing object and said object so that said contour-drawing object thus generated is positioned behind said object when observed from a view point  
(Kaneko, step 6, p.9—pasting A on A' frame has the effect of positioning the contour-drawing object (A') behind said object (A)); and
- drawing a pixel according to a polygon having a distance closest to the view point, set in said setting, out of polygons projectable into said pixel, wherein when the polygon projected into the pixel is a polygon forming said object, said pixel is drawn according to said polygon  
(Schaufler, "3.2 Layered Impostors," p.101, first three sentences)
- and wherein when the polygon projected into the pixel is a polygon forming said contour-drawing object  
(obvious because if Schaufler discloses layered impostors in order to draw a teapot (see Figure 3, p.101), layered impostors can be used to draw a contour-drawing object)

Art Unit 2671

said pixel is drawn in an optional contour color.  
(Kaneko, step 7(b), p.9)

26. Claim 13 is the same as claim 9 except that claim 9 discloses a computer-readable medium storing a program which draws an object, and claim 13 discloses an object drawing method. Since a method of drawing an object (claim 13) is at least obvious in the program (claim 9), claim 13 is also rejected. Finally, Imai discloses drawing an object in a virtual space because any scene in a video game presents a virtual world, and scenes are comprised of objects.

27. Accordingly, in view of the foregoing, claims 6-9, 12-13, 16-18 and 20-21 are rejected as being unpatentable under 35 U.S.C. 103(a) by Imai, Kaneko and Schaufler.

***Response to Remarks***

28. Since the applicants have amended the claims to distinguish from Kurita et al. (U.S. Pat. No. 5,331,336), Kaneko has been submitted to replace Kurita et al. in the rejections, and Imai has been submitted to replace San et al. (U.S. Pat. No. 6,646,653) because San et al. is not combinable with Kaneko.

***Action is Final***

29. Therefore, **THIS ACTION IS MADE FINAL**. Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

30. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit 2671

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the Office should be directed to the examiner, Lance Sealey, whose telephone number is (703) 305-0026. He can be reached from 7:00 am-3:30 pm Monday-Friday EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

**Any response to this action should be mailed to:**

MS AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450


**or faxed to:**

**(703) 872-9306**

Art Unit 2671

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Sixth Floor (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



MARK ZIMMERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600